

Proceedings

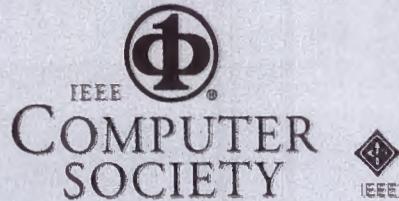
Fifteenth International Conference on

DATA ENGINEERING

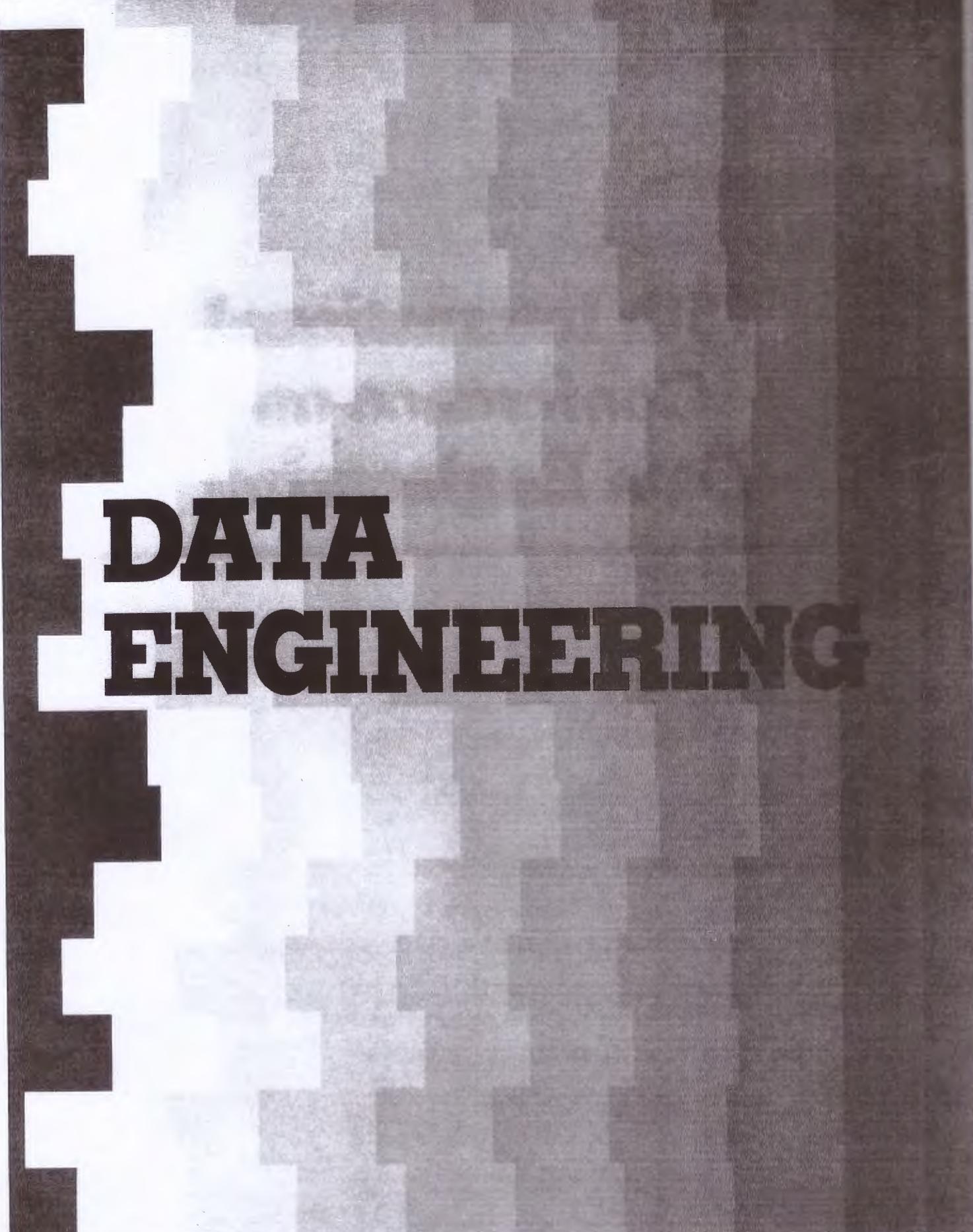
March 23-26, 1999
Sydney, Australia

Edited by
Masaru Kitsuregawa, Leszek Maciaszek, Mike Papazoglou, and Calton Pu

Sponsored by
IEEE Computer Society Technical Committee on Data Engineering



**15th International
Conference on
Data Engineering**



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Proceedings

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Message from the General Co-Chairs

Welcome to the Fifteenth International Conference on Data Engineering in the city of Sydney, and the very first ICDE to be held in the Southern hemisphere! We trust you will find that the program committee for this edition of ICDE has succeeded to continue a tradition of scientific excellence. We also sincerely hope that you will be able to use the opportunity of your visit to Sydney to explore as well some of the other cultural and intellectual challenges offered by this exciting continent that is Australia.

Sydney undoubtedly is one of the world's great cities, and will be home of the Olympics in 2000. Its spectacular harbour with the world famous Opera House and Harbour Bridge is but one of its assets. The city hosts several top class universities, and is a cultural melting pot offering theatres, concert halls, a world class zoo, museums and generally any medium necessary for social life in the last year of this millennium. We hope that you will be able to explore, within at most a few hours flight away from the city, environments as varied as the Blue Mountains, the Red Centre, the Barrier Reef, the island-state of Tasmania, the cities of Melbourne, Adelaide and Brisbane or the modern architectural marvels of Canberra.

The effort to set up an international event the size of ICDE is considerable and such a conference could not take place without the collaboration of many individuals over an extended span of time (the original idea for this conference was proposed in 1995!). First, of course, we thank the program committee members for performing the always difficult balancing act of selecting the best possible program from the papers submitted. The three Program Committee Co-Chairs Calton, Masaru and Mike, have steered this conference from its earliest conception to the event in which you are presently participating, and you may judge for yourselves the result of their labors by turning this very page.

However, the General Co-Chairs would like to use this opportunity of this message to add explicit expressions of gratitude to the following individuals. Without their unflagging commitments, it would have been impossible to organize anything.

Thanks, first and foremost, to Ann Hee Hiong Ngu, whose pivotal role and commitment at the center of this event kept preparations and planning on track, even when she was working overseas in the U.S. or when one or the other General Chair was once again traveling. For everyone who follows in this list, the order is completely arbitrary. Therefore, our appreciation goes to Alan Fekete, who went to great pains to prepare the budget and then had the rather unpleasant, but necessary job, of enforcing it. Thanks also to John Shepherd, our Publicity Chair, for the many hours he spent designing the conference webpage, the online registration form and the poster. Our sincere gratitude also extends to Uma Srinivasan for overseeing the volunteers and taking care of all respects of the registration and to Abukye Aurum, for organizing the conference bags and banquet.

We also want to say a special word of thanks to the consecutive Heads of the School of Computer Science and Engineering for supporting the conference (by the time the conference happens, we will in fact be into the term of the third HoS, Arun Sharma).

Neither do we want to forget the Panel Program Chair Bhavani Thuraisingham, nor Athman Bouguettaya and Meichun Hsu, respectively Tutorial and Industrial Program

Chairs, for creating the opportunity for a wider audience than merely scientists and researchers to participate in this dissemination of the state-of-the-art in databases that is ICDE.

The proceedings you are holding are, of course, the joint work of Leszek Maciaszek, our Publications Chair and the Program Chairs.

To all others constructively involved in this event, and whom we may have forgotten here, our apologies together with our nonetheless sincere thanks.

And, last but by no means least, tradition dictates that we especially thank you, the conference participant, attending this ICDE. We know you have a choice of conferences and we certainly appreciate that you chose to fly with us. We hope you may enjoy it!

John Hiller

Robert A Meersman

General Co-Chairs

Message from the Program Co-Chairs

The 15th International Conference on Data Engineering (ICDE '99) has grown in terms of technical areas, paper submissions, and countries represented. In total, 299 papers were submitted to ICDE '99 from every continent — a record high number.

The papers were processed by nine Vice Chairs. Each paper was reviewed by at least three reviewers from the Program Committee members and/or area experts. Nearly 1000 reviews were produced within a short review period. The Program Committee meeting was held in Chicago. As result, out of the 299 submissions, 57 research papers were accepted for the technical program, six for the industrial program and 23 papers were accepted for poster presentations. Due to the high competition for limited space we regret that many high-quality submissions could not be accommodated.

The technical program for this conference is the result of the hard work of many authors, reviewers, Program Committee members, Vice Chairs and other volunteers. We are grateful to them for investing their time and energy to make the conference happen.

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